

ORGANOCHLORINE EXPOSURE DURING PREGNANCY AND NEURODEVELOPMENT IN PRESCHOOL CHILDREN

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Background and Aims: Persistent organochlorine compounds (POCs) were widely used until they were banned in the nineteen-seventies. Published findings on POCs exposure and neurodevelopment in children are inconsistent. The aim of this study was to assess the effects of prenatal organochlorine exposure on neurodevelopment.

Methods: A total of 2250 mother and 14-month-old child pairs from the cohorts of Valencia, Sabadell and Gipuzkoa of the INMA project (www.proyecto-inma.org) participated in this study. Data were collected during pregnancy, birth and at 14 months of age. Socio-demographic data including residency and information concerning lifestyle, medical and reproductive history, and diet were collected using standardised questionnaires, while cognitive and psychomotor development of the children was assessed using the Bayley Scales of Infant Development. The concentrations of polychlorinated biphenyls (PCBs), and organochlorine pesticides (HCB, α -HCH, γ -HCH, p,p'-DDE and p,p'-DDT) were measured in serum samples collected in the first visit (weeks 10-12 of gestation). General additive models were used to explore the shape of the relationship between log-transformed POCs and infant neurodevelopment, and, subsequently, multivariable linear regression models were developed to further assess this relationship.

Results: A total of 632 mother and infant pairs were excluded from the analysis, due to missing data on POCs or Bayley scales, or because preterm delivery, so overall 1518 cases were analysed. We found a significant relationship between level of PCBs (sum of PCB 138+153+180) and psychomotor development (β (95%Confidence Interval): -2.19 (95%CI -3.87,-0.51)). However, for the other POCs we did not find any significant association with neurodevelopment.

Conclusions: Prenatal exposure to PCBs may play a negative influence on psychomotor development at early stages in children. In line with this, we believe that it is important to analyse the influence of this type of factor at older ages, as it would be possible to assess more complex cognitive functions using more accurate and reliable instruments.